

Claims:

All claims of the present Application are shown below. This listing of claims replaces all prior versions and listings of claims in the application:

1-22 (Canceled)

23. (Currently Amended) A method for monitoring a mobile device, the method comprising:

defining a route within a coordinate system using a plurality of polygons, with each polygon defined by at least one set of coordinates;

rotating at least one of the polygons such that at least one edge of each rotated polygon is parallel with an axis of the coordinate system;

identifying a set of coordinates associated with a particular location of a monitored device; and

comparing the set of coordinates for the monitored device with the plurality of polygons to determine a location of the monitored device with respect to the route.

24. (Previously Presented) The method of claim 23 wherein each of the plurality of polygons overlaps at least one other polygon in the plurality of polygons.

25. (Previously Presented) The method of claim 23 wherein each of the plurality of polygons comprises a rectangle, with each rectangle defined by at least two sets of coordinates.

26. (Previously Presented) The method of claim 23 wherein comparing the set of coordinates for the monitored device with the plurality of polygons to determine a location of the monitored device with respect to the route comprises sequentially comparing the set of coordinates for the monitored device with each of the plurality of polygons until a polygon that encloses the set of coordinates for the monitored device is identified.

27. (Previously Presented) The method of claim 26 wherein comparing the set of coordinates for the monitored device with the plurality of polygons to determine a location of the monitored device with respect to the route further comprises:

comparing the set of coordinates for the monitored device with a first polygon from the plurality of polygons;

determining that the first polygon does not enclose the set of coordinates for the monitored device;

identifying a second polygon from the plurality of polygons, wherein the second polygon is adjacent to the first polygon; and

comparing the set of coordinates for the monitored device with the second polygon.

28. (Previously Presented) The method of claim 27 wherein the first polygon comprises a polygon for which an immediately preceding comparison between the first polygon and a preceding set of coordinates for the monitored device resulted in a determination that the first polygon enclosed the preceding set of coordinates.

29. (Previously Presented) The method of claim 23 wherein comparing the set of coordinates for the monitored device with the plurality of polygons to determine a location of the monitored device with respect to the route comprises:

determining whether at least one of the plurality of polygons encloses the set of coordinates for the monitored device; and

identifying a departure from the route if none of the plurality of polygons encloses the set of coordinates for the monitored device.

30. (Currently Amended) The method of claim 29 further comprising:

storing the at least one set of coordinates defining each polygon from the plurality of polygons on the monitored device after the rotation of one or more of the polygons, wherein comparing the set of coordinates for the monitored device with the plurality of polygons to determine a location of the monitored device with respect to the route is performed on the monitored device; and

initiating a predetermined response to the identified departure.

31. (Previously Presented) The method of claim 30 wherein the predetermined response comprises wirelessly transmitting a notification of the identified departure.

32. (Currently Amended) A system for facilitating location monitoring, the system comprising:

a locator operable to identify a location of a monitored device;

a memory operable to store coordinates associated with a plurality of polygons, with the plurality of polygons defining a route in a coordinate system, at least one of the stored polygons rotated such that at least one edge of each rotated polygon is parallel with an axis of the coordinate system; and

a processor operable to compare coordinates representing the identified location with coordinates associated with the plurality of polygons to determine a relative position between the monitored device and the route.

33. (Previously Presented) The system of claim 32 wherein the monitored device includes the locator, the memory, and the processor.

34. (Previously Presented) The system of claim 32 further comprising a mobile transmitter operable to selectively send a message based on the relative position between the monitored device and the route.

35. (Previously Presented) The system of claim 32 wherein each of the plurality of polygons comprises a rectangle, with each rectangle defined, at least in part, by coordinates associated with two opposite corners of the rectangle.

36. (Previously Presented) The system of claim 32 wherein the locator comprises a global positioning satellite receiver.

37. (Previously Presented) The system of claim 32 wherein the processor is further operable to sequentially compare the location of the monitored device with each of the plurality of polygons until a polygon that encloses the location of the monitored device is identified.

38. (Previously Presented) The system of claim 32 wherein the processor is further operable to:

determine whether at least one of the plurality of polygons encloses the location of the monitored device; and

identify a departure from the route if none of the plurality of polygons encloses the location of the monitored device.

39. (Previously Presented) The system of claim 32 wherein the monitored device comprises a vehicle.

40. (Currently Amended) A method for monitoring a mobile device, the method comprising:

defining a route within a coordinate system using rectangles, with each rectangle defined by associated coordinates;

rotating at least one of the rectangles such that at least one edge of each rotated rectangle is parallel with an axis of the coordinate system;

storing the coordinates associated with each rectangle on a monitored device;

identifying coordinates associated with a particular location of the monitored device;

comparing the coordinates for the monitored device with a plurality of the rectangles to determine a relative location between the monitored device and the route; and

sending a message from the monitored device if the monitored device deviates from the route.

41. (Previously Presented) The method of claim 40 wherein comparing the coordinates for the monitored device with a plurality of the rectangles to determine a relative location between the monitored device and the route comprises:

comparing the coordinates for the monitored device with a current rectangle;

determining that the current rectangle does not enclose the coordinates for the monitored device;

selecting a rectangle adjacent to the current rectangle as a new current rectangle; and

comparing the coordinates for the monitored device with the new current rectangle.

42. (Previously Presented) The method of claim 41 wherein comparing the coordinates for the monitored device with a plurality of the rectangles to determine a relative location between the monitored device and the route further comprises sequentially selecting new current rectangles and comparing the coordinates for the monitored device with each new current rectangle until a rectangle that encloses the coordinates for the monitored device is identified.

43. (New) The method of claim 23, wherein comparing the set of coordinates for the monitored device with the plurality of polygons to determine a location of the monitored device with respect to the route comprises:

- identifying that a current polygon comprises one of the rotated polygons;
- rotating the coordinates for the monitored device by a rotation angle used to rotate the current polygon; and
- comparing the rotated coordinates for the monitored device with the current polygon.

44. (New) The method of claim 40, wherein comparing the coordinates for the monitored device with a plurality of the rectangles to determine a relative location between the monitored device and the route comprises:

- identifying that a current rectangle comprises one of the rotated rectangles;
- rotating the coordinates for the monitored device by a rotation angle used to rotate the current rectangle; and
- comparing the rotated coordinates for the monitored device with the current rectangle.